

**REMARKS / ARGUMENTS**

Reconsideration of the above-identified patent application in view of the amendments above and the remarks following is respectfully requested.

Claims 1-11, 14-18 are in this case. Claims 1-5 and 14-16 have been rejected under 35 U.S.C. 102(b). Claims 6-11 have been rejected under 35 U.S.C. 103(a). Independent claims 1 and 14 have been amended. New claims 17 and 18 have been added.

The claims before the Examiner are directed towards a projectile for piercing armor having a first "cruise" motor and a second "penetration" or acceleration rocket motor activated at an appropriate distance from the target, and for a method piercing armor using the same.

**35 U.S.C. 102(b) Rejections – Brandon '766**

The Examiner has rejected claims 1-5 and 14-16 under 35 U.S.C. 102(b) as being anticipated by U.S. 5,363,766 (Brandon). The Examiner's rejection is respectfully traversed.

Brandon teaches a ramjet-powered shell with a shaped-charge or high-explosive payload designed to reduce the time of flight of such a shell. It is possible to read Brandon's ramjet on a first "cruise" motor of the present invention. Brandon does not disclose two motors in one projectile. Thus not all features of independent claims 1 and 14 and dependent claims 2 through 5, 15 and 16 are disclosed in Brandon.

While continuing to traverse the Examiner's rejections, Applicant has, in order to expedite the prosecution, chosen to amend independent claims 1 and 14 in order to clarify and emphasize the crucial distinctions between the present invention and the prior art. Specifically, claims 1 and 14 have been amended by replacing the term "a cruise propellant" with the term "a first motor". Support for this amendment and clarification as to the meaning thereof can be found, *inter alia*, on page 6 lines 10 to 15 of the specification.

Applicant also wishes to make minor substantially typographical modifications in claim 1, namely replacing "said projectile" with "the projectile".

Applicant also wishes to make minor substantially typographical modifications in claim 14, namely replacing "said target" with "the target", replacing the term "a projectile for piercing armor" with "an armor piercing projectile" and replacing the phrase "flight said projectile" with the phrase "flight of said projectile".

February 25, 2002

Application Number 09/700,660

Amended independent claims 1 and 14 now feature language that makes the nature of the present invention absolutely clear. Applicant believes that the amendment of the claims renders independent claims 1 and 14, and consequently claims 2-5 and 15-16 respectively dependent therefrom, are in condition for allowance.

**35 U.S.C. 103(a) Rejections – Brandon ‘766 in light of Luttrell ‘804**

The Examiner has rejected claims 6 and 7 under 35 U.S.C. 103(a) as being obvious from Brandon in light of US 3,903,804 (Luttrell). The Examiner’s rejection is respectfully traversed.

Claims 6 and 7 are dependent from claim 5, 4 and 1. Brandon, even in light of Luttrell does not teach all features of claims 1, 4 and 5. Consequently, claims 6 and 7 are in condition for allowance.

That said, Luttrell teaches an innovative device for the dispersal of inert subprojectiles from a larger rocket-propelled warhead. One skilled in the art recognizes that Luttrell teaches of an improved form of the well-known “canister” or “flechette” munitions. Such weapons are only incidentally effective at neutralizing reactive armor. Further, it is not clear how Brandon and Luttrell can be combined in one warhead. Luttrell arms a warhead as a result of initial rocket motor acceleration (column 3 lines 22-25). When the rocket motor burns-out inertia carries the subprojectiles forward at a rate no higher than the maximal rate the rocket attained (column 3 lines 55-57). If the subprojectiles of Luttrell were to be attached to a ramjet-powered HEAT warhead of Brandon, the HEAT warhead would impact the target before or simultaneously with the subprojectiles. In both cases the subprojectiles would not neutralize any active armor before the HEAT shell is activated.

**35 U.S.C. 103(a) Rejections – Brandon ‘766 in light of Luttrell ‘804 and Jacobson ‘243**

The Examiner has rejected claims 8 through 11 under 35 U.S.C. 103(a) as being obvious from Brandon in light of Luttrell and in light of US 4,127,243 (Jacobson). The Examiner’s rejection is respectfully traversed.

February 25, 2002

Claims 8 and 11 are dependent from claim 7, 6, 5, 4 and 1. Brandon, even in light of Luttrell and Jacobson does not teach all features of claims 1, 4, 5, 6 and 7. Consequently, claims 8 through 11 are in condition for allowance.

That said, Jacobson teaches of a projectile with various devices to allow evasive maneuvers. Jacobson thus teaches of a highly complex and expensive weapons system. In contrast, Luttrell explicitly states the desire to produce a simple and inexpensive weapon, column 4 lines 25-29. One skilled in the art would not be motivated to combine the teachings of Jacobson with the teachings of Luttrell. If one skilled in the art chose to face the problems solved by Luttrell in a projectile designed in accordance with the teachings of Jacobson, it would be most simple to make use of the electronics already present and not to resort to the added complexity of adding Luttrell.

### New Claims

Applicant has added new claims 17 and 18 to the present application.

The first new claim limits the first "cruise" motor to be a rocket motor, supported on page 6 lines 10 to 15 of the specification.

The second new claim limits activation of the first motor to the beginning of the flight of the projectile when the projectile is a shell, supported on page 8 line 2 of the specification.

In light of the above, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Respectfully Submitted,



\_\_\_\_\_  
Mark M. Friedman  
Attorney for Applicant  
Registration No. 33,883

February 25, 2001

VERSION WITH MARKINGS TO SHOW CHANGES MADEIn the claims:**Claim 1 has been amended as follows:**

1. A projectile for piercing armor comprising:
  - a) a ~~cruise propellant~~ first motor for maintaining a cruise velocity of ~~said~~ the projectile; and
  - b) an acceleration rocket motor activated after launch for accelerating ~~said~~ the projectile from said cruise velocity to a penetration velocity, in a final stage of flight of the said projectile.

**Claim 14 has been amended as follows:**

14. A method for piercing armor of a target, the method comprising the steps of:
  - a) providing a ~~an armor piercing projectile~~ for piercing armor-including:
    - i. a ~~cruise propellant~~ first motor for maintaining a cruise velocity of said projectile; and
    - ii. an acceleration rocket motor activated after launch for accelerating said projectile from said cruise velocity to a penetration velocity in a final stage of flight of said projectile;
  - b) launching said projectile at ~~said~~ the target;
  - c) maintaining said projectile at said cruise velocity;
  - d) increasing said velocity of said projectile to a penetrating velocity; and
  - e) impacting ~~said~~ the target with said projectile at said penetrating velocity.

**Claims 17 and 18 are:**

17. The projectile of claim 1 wherein said first motor is a rocket motor.
18. The projectile of claim 2 wherein said first motor is activated substantially at the beginning of flight of the projectile.